

IN THE CLAIMS:

Please substitute the following claims for the pending claims with the same number:

1. (currently amended) An instance browser comprising:
 - a repository of class and relation definitions for an information model and a plurality of repositories of instances of classes, wherein classes correspond to sets of instances having a common characterization, and relations correspond to inter-relationships between classes and serve to relate instances of one or more classes;
 - a server having access to said repository of class and relation definitions and to said plurality of repositories of instance of classes, for responding to queries relating to class and relation definitions and instances of classes ~~in said repository~~; and
 - a graphical user interface communicating with said server and interactively displaying icons representing instances of classes as a user browses said ~~repository~~ information model and navigates from one instance to another via the relations, wherein information about instances from more than one repository is graphically accessible from the same icon, the graphical user interface enabling a user to interactively (i) select and view an icon representing a specific instance, I1, of a specific class, C1, (ii) view a list of one or more relations relating the class C1 to other classes, (iii) select a specific relation, R, within the list, and (iv) view an icon representing an instance, I2, of another class, C2, related to the instance I1 according to the selected relation R.
2. (original) The instance browser of claim 1 wherein an icon is associated with an instance using a global identifier (GID).
3. (original) The instance browser of claim 2 wherein the GID is a function in the repository.
4. (currently amended) The instance browser of claim 3 wherein the GID is a function ~~of~~ defined on the largest class in the repository.
5. (original) The instance browser of claim 1 wherein an icon is associated with an instance based on a view of the instance.

6. (original) The instance browser of claim 1 wherein an image is associated with an icon by the class, an instance of which is represented by the icon.

7. (original) The instance browser of claim 1 wherein an image is associated with an icon by a function from instances to images.

8. (original) The instance browser of claim 7 wherein the function from instances to images is defined within the repository.

9. (original) The instance browser of claim 7 wherein the function from instances to images is selected by a user from among a plurality of functions.

10. (currently amended) The instance browser of claim 1 wherein a menu associated with an icon lists functions having as domain the class, an instance of which is represented by the icon, wherein a function is a binary relation that accepts as input an instance of a first class, referred to as the domain of the function, and produces as output a corresponding instance of a second class, referred to as the co-domain of the function.

11. (original) The instance browser of claim 10 further comprising a function search tool for searching for functions having as domain the class, an instance of which is represented by the icon.

12. (original) The instance browser of claim 11 wherein said function search tool searches over a network.

13. (original) The instance browser of claim 11 wherein said function search tool searches over a central repository.

14. (original) The instance browser of claim 11 wherein said function search tool searches for functions having as domain the class, an instance of which is represented by the icon, when a user requests to see the menu associated with the icon.

15. (original) The instance browser of claim 10 wherein icons are created for values of listed functions.

16. (original) The instance browser of claim 1 wherein said graphical user interface displays collections of icons for collections of instances of classes.

17. (original) The instance browser of claim 16 wherein a collection of instances is defined by a logical term.

18. (previously presented) The instance browser of claim 17 wherein the logical term is a single relation from the ontology with instances specified for all but one parameter, and the collection is defined by those instances for the unspecified parameter that satisfy the relation in conjunction with the instances specified for the other parameters.

19. (original) The instance browser of claim 17 further comprising an instance search tool for searching for instances to display in the collection.

20. (original) The instance browser of claim 19 wherein said instance search tool searches for instances over a network.

21. (original) The instance browser of claim 19 wherein said instance search tool searches for instances over a central repository.

22. (original) The instance browser of claim 19 wherein said instance search tool includes an inference engine.

23. (original) The instance browser of claim 16 wherein said graphical user interface presents instances of a collection grouped by subclasses to which they belong.

24. (original) The instance browser of claim 1 further comprising a filter, to filter at least one of classes, relations and instances based on authorship.

25. (currently amended) A method for instance browsing comprising:

managing a repository of class and relation definitions for an information model, and a plurality of repositories of instance documents that describe instances of classes and tuples of relations, wherein classes correspond to sets of instances having a common characterization, and relations correspond to inter-relationships between classes and serve to relate instances of one or more classes;

responding to queries relating to class and relation definitions and instance of classes in the repository of class and relation definitions and in the plurality of repositories of instance documents; and

interactively displaying icons representing instances of classes as a user browses the repository information model and navigates from one instance to another via the relations, based on said responding, whereby instance documents from more than one repository are graphically accessible from the same icon, thereby enabling a user to interactively (i) select and view an icon representing a specific instance, I1, of a specific class, C1, (ii) view a list of one or more relations relating the class C1 to other classes, (iii) select a specific relation, R, within the list, and (iv) view an icon representing an instance, I2, of another class, C2, related to the instance I1 according to the selected relation R.

26. (original) The method of claim 25 further comprising associating an icon with an instance using a global identifier (GID).

27. (original) The method of claim 26 wherein the GID is a function in the repository.

28. (currently amended) The method of claim 27 wherein the GID is a function-~~of~~ defined on the largest class in the repository.

29. (original) The method of claim 25 further comprising associating an icon with an instance based on a view of the instance.

30. (original) The method of claim 25 further comprising associating an image with an icon by the class, an instance of which is represented by the icon.

31. (original) The method of claim 25 further comprising associating an image with an icon by a function from instances to images.

32. (original) The method of claim 31 wherein the function from instances to images is defined within the repository.

33. (original) The method of claim 31 wherein the function from instances to images is selected by a user from among a plurality of functions.

34. (currently amended) The method of claim 25 further comprising associating a menu with an icon, the menu listing functions having as domain the class, an instance of which is represented by the icon, wherein a function is a binary relation that accepts as input an instance of a first class, referred to as the domain of the function, and produces as output a corresponding instance of a second class, referred to as the co-domain of the function.

35. (original) The method of claim 34 further comprising searching for functions having as domain the class, an instance of which is represented by the icon.

36. (original) The method of claim 35 wherein said searching searches over a network.

37. (original) The method of claim 35 wherein said searching searches over a central repository.

38. (original) The method of claim 35 wherein said searching searches for functions having as domain the class, an instance of which is represented by the icon, when a user requests to see the menu associated with the icon.

39. (original) The method of claim 34 further comprising creating icons for values of listed functions.

40. (previously presented) The method of claim 25 wherein said interactively displaying icons comprises:

searching for instance documents including a description of a given instance and a reference to an icon associated therewith;

searching for instance documents including a description of the given instance and a caption associated therewith;

displaying the icon and the caption associated with the given instance.

41. (previously presented) The method of claim 40 wherein said interactively displaying icons further comprises attaching a pop-up menu to the displayed icon, comprising:
searching for the class, an instance of which is represented by the icon; and
for functions whose domain is the class, adding a corresponding item to the pop-up menu.

42. (original) The method of claim 41 further comprising grouping functions whose domain is the class into a sub-menu within the pop-up menu.

43. (previously presented) The method of claim 41 wherein said interactively displaying icons further comprises, for functions whose domain is the class:
searching for instance documents describing the function; and
creating an icon for the instance described in the instance document.

44. (currently amended) The method of claim 43 wherein said searching for instance documents ~~steps comprise~~ comprises filtering instance documents based on authorship.

45. (previously presented) The method of claim 25 wherein said interactively displaying icons comprises:
providing a definition of a collection, including a name of a relation and specifying an instance for all but one class from the domain of the relation;
searching for instance documents describing the relation;
for each instance document describing the relation, searching for tuples where the instance described in the instance document is the element in the unspecified class from the domain of the relation in conjunction with the instances provided for the other classes of the domain;
for each instance document including at least one such tuple, creating an icon for the instance described in the instance document.

46. (original) The method of claim 45 wherein said searching for instance documents comprises filtering instance documents based on authorship.

47. (original) The method of claim 46 wherein said searching searches over a network.

48. (original) The method of claim 46 wherein said searching searches over a central repository.

49. (original) The method of claim 46 wherein said searching uses an inference engine.

50. (original) The method of claim 45 further comprising deriving a caption for the collection.

51. (currently amended) A distributed ontology system comprising:

a central computer comprising a global ontology directory;

a plurality of server computers, each comprising:

a repository of class and relation definitions for an ontology and a repository of instances of classes, wherein classes correspond to sets of instances having a common characterization, and relations correspond to inter-relationships between classes and serve to relate instances of one or more classes; and

a repository manager for responding to queries relating to class and relation definitions and instances of classes in said repository of class and relation definitions and in said repository of instance of classes,

wherein, for at least one class, a portion of the relations involving the class reside in a repository in a different-repository server computer than others of the relations involving the class;

a computer network connecting said central computer with said plurality of ontology server computers; and

a graphical user interface communicating with said computer network interactively displaying icons representing instances of classes as a user browses said ~~plurality of repositories~~ ontology and navigates from one instance to another via the relations, the graphical user interface enabling a user to interactively (i) select and view an icon representing a specific instance, I1, of a specific class, C1, (ii) view a list of one or more relations relating the class C1 to other classes, (iii) select a specific relation, R, within the list, and (iv) view an icon representing an instance, I2, of another class, C2, related to the instance I1 according to the selected relation R.

52. (original) The system of claim 51 wherein an icon is associated with an instance using a global identifier (GID).

53. (original) The system of claim 52 wherein the GID is a function in the global ontology directory.

54. (currently amended) The system of claim 53 wherein the GID is a function ~~of~~ defined on the largest class in the global ontology directory.

55. (original) The system of claim 51 wherein an icon is associated with an instance based on a view of the instance.

56. (original) The system of claim 51 wherein an image is associated with an icon by the class, an instance of which is represented by the icon.

57. (original) The system of claim 51 wherein an image is associated with an icon by a function from instances to images.

58. (original) The system of claim 57 wherein the function from instances to images is defined within the global ontology directory.

59. (original) The system of claim 57 wherein the function from instances to images is selected by a user from among a plurality of functions.

60. (currently amended) The system of claim 51 wherein a menu associated with an icon lists functions having as domain the class, an instance of which is represented by the icon, wherein a function is a binary relation that accepts as input an instance of a first class, referred to as the domain of the function, and produces as output a corresponding instance of a second class, referred to as the co-domain of the function.

61. (original) The system of claim 60 further comprising a function search tool for searching for the functions having as domain the class, an instance of which is represented by the icon.

62. (original) The system of claim 61 wherein said function search tool searches over a network.

63. (original) The system of claim 61 wherein said function search tool searches over a central repository.

64. (original) The system of claim 61 wherein said function search tool searches for functions having as domain the class, an instance of which is represented by the icon, when a user requests to see the menu associated with the icon.

65. (original) The system of claim 60 wherein icons are created for values of the listed functions.

66. (original) The system of claim 51 wherein said graphical user interface displays collections of icons for collections of instances of classes.

67. (original) The system of claim 66 wherein a collection of instances is defined by a logical term.

68. (previously presented) The system of claim 67 wherein the logical term is a single relation from the ontology with instances specified for all but one parameter, and the collection is defined by those instances for the unspecified parameter that satisfy the relation in conjunction with the instances specified for the other parameters.

69. (original) The system of claim 67 further comprising an instance search tool for searching for instances to display in the collection.

70. (original) The system of claim 69 wherein said instance search tool searches for instances over a network.

71. (original) The system of claim 69 wherein said instance search tool searches for instances over a central repository.

72. (original) The system of claim 69 wherein said instance search tool includes an inference engine.

73. (original) The system of claim 66 wherein said graphical user interface presents instances of a collection grouped by subclasses to which they belong.

74. (original) The system of claim 51 further comprising a filter, to filter at least one of classes, relations and instance documents based on authorship.

75. (currently amended) A method comprising:

managing a plurality of repositories of class and relation definitions for an ontology, and a repository of instance documents that describe instances of classes and tuples of relations, wherein classes correspond to sets of instances having a common characterization, and relations correspond to inter-relationships between classes and serve to relate instances of one or more classes, and wherein, for at least one class, a portion of the relations involving the class reside in a repository in a different repository server computer than others of the relations involving the class;

managing a global ontology directory for the plurality of repositories;

responding to queries relating to class and relation definitions and instances of classes in at least one repository by consulting the global ontology directory; and

interactively displaying icons representing instances of classes as a user browses the ~~repository~~ ontology and navigates from one instance to another via the relations, based on said responding, thereby enabling a user to interactively (i) select and view an icon representing a specific instance, I1, of a specific class, C1, (ii) view a list of one or more relations relating the class C1 to other classes, (iii) select a specific relation, R, within the list, and (iv) view an icon representing an instance, I2, of another class, C2, related to the instance I1 according to the selected relation R.

76. (original) The method of claim 75 further comprising associating an icon with an instance using a global identifier (GID).

77. (original) The method of claim 76 wherein the GID is a function in the global ontology directory.

78. (original) The method of claim 76 wherein the GID is a function ~~of~~ defined on the largest class in the global ontology directory.

79. (original) The method of claim 75 further comprising associating an icon with an instance based on a view of the instance.

80. (original) The method of claim 75 further comprising associating an image with an icon by the class, an instance of which is represented by the icon.

81. (original) The method of claim 75 further comprising associating an image with an icon by a function from instances to images.

82. (original) The method of claim 81 wherein the function from instances to images is defined within the global ontology directory.

83. (original) The method of claim 75 wherein the function from instances to images is selected by a user from among a plurality of functions.

84. (currently amended) The method of claim 75 wherein a menu associated with an icon lists functions having as domain the class, an instance of which is represented by the icon, wherein a function is a binary relation that accepts as input an instance of a first class, referred to as the domain of the function, and produces as output a corresponding instance of a second class, referred to as the co-domain of the function.

85. (original) The method of claim 84 further comprising searching for functions having as domain the class, an instance of which is represented by the icon.

86. (original) The method of claim 85 wherein said searching searches over a network.

87. (original) The method of claim 85 wherein said searching searches over a central repository.

88. (original) The method of claim 85 wherein said searching searches for the functions having as domain the class, an instance of which is represented by the icon, when a user requests to see the menu associated with the icon.

89. (original) The method of claim 84 further comprising creating icons for values of listed functions.

90. (previously presented) The method of claim 75 wherein said interactively displaying icons comprises:

- searching for instance documents including a description of a given instance and a reference to an icon associated therewith;

- searching for instance documents including a description of the given instance and a caption associated therewith;

- displaying the icon and the caption associated with the given instance.

91. (previously presented) The method of claim 90 wherein said interactively displaying icons further comprises attaching a pop-up menu to the displayed icon, comprising:

- searching for the class, an instance of which is represented by the icon; and

- for functions whose domain is the class, adding a corresponding item to the pop-up menu.

92. (original) The method of claim 91 further comprising grouping functions whose domain is the class into a sub-menu within the pop-up menu.

93. (previously presented) The method of claim 91 wherein said interactively displaying icons further comprises, for each function having as domain the class, an instance of which is represented by the icon:

- searching for instance documents describing the function; and

- creating an icon for the instance described in the instance document.

94. (currently amended) The method of claim 93 wherein said searching for instance documents ~~steps comprise~~ comprises filtering instance documents based on authorship.

95. (previously presented) The method of claim 75 wherein said interactively displaying icons comprises:

- providing a definition of a collection, including a name of a relation and specifying an instance for all but one class from the domain of the relation;

- searching for instance documents describing the relation;

for each instance document describing the relation, searching for tuples where the instance described in the instance document is the element in the unspecified class from the domain of the relation in conjunction with the instances specified for the other classes of the domain;

for each instance document including at least one such tuple, creating an icon for the instance described in the instance document.

96. (original) The method of claim 95 wherein said searching for instance documents comprises filtering instance documents based on authorship.

97. (original) The method of claim 96 wherein said searching searches over a network.

98. (original) The method of claim 96 wherein said searching searches over a central repository.

99. (original) The method of claim 96 wherein said searching uses an inference engine.

100. (original) The method of claim 95 further comprising deriving a caption for the collection.

101. (previously presented) A computer readable medium providing computer instructions which when executed cause a system to perform a method as in claim 25.

102. (previously presented) A computer readable medium providing computer instructions which when executed cause a system to perform a method as in claim 75.